

CLAIMS

1. A unit-to-unit data exchange system for exchanging data between units connected to each other via a communications medium,
5 comprising:

a first unit having at least one piece of data that can be exchanged and requesting to exchange data with another unit;

a second unit having data of interest to the first unit;
and

10 an exchange completion data keeping device connected to the first and second units via the communications medium for keeping first exchange completion data that is necessary, after completion of the data exchange between the first and second units, for reproducing data obtained by the first unit and second exchange
15 completion data that is necessary, after completion of the data exchange between the first and second units, for reproducing data obtained by the second unit,

wherein the exchange completion data keeping device includes exchange completion data transmission means for transmitting the
20 first exchange completion data to the first unit and the second exchange completion data to the second unit only when the first and second units have successfully received data of interest.

2. The unit-to-unit data exchange system according to claim 1,
25 wherein:

the first unit includes:

first exchange completion data production means for producing the second exchange completion data; and

5 first exchange completion data transmission means for transmitting the second exchange completion data produced by the first exchange completion data production means to the exchange completion data keeping device;

the second unit includes:

10 second exchange completion data production means for producing the first exchange completion data; and

second exchange completion data transmission means for transmitting the first exchange completion data produced by the second exchange completion data production means to the exchange completion data keeping device; and

15 the exchange completion data keeping device further includes exchange completion data keeping means for keeping the first and second exchange completion data transmitted from the exchange completion data transmission means so that each unit from which the exchange completion data has been transmitted can be
20 identified.

3. The unit-to-unit data exchange system according to claim 2, wherein:

the first unit further includes:

25 first data conversion means for converting data owned

by the first unit to data that can be reproduced successfully only by using the second exchange completion data; and

first data recovery means for recovering data that can be reproduced successfully from data received from the second unit by using the first exchange completion data; and

the second unit further includes:

second data conversion means for converting data owned by the second unit to data that can be reproduced successfully only by using the first exchange completion data; and

second data recovery means for recovering data that can be reproduced successfully from data received from the first unit by using the second exchange completion data.

4. The unit-to-unit data exchange system according to claim 1, wherein:

the first unit further includes first exchange completion data production requesting means for requesting the exchange completion data keeping device to produce the second exchange completion data;

the second unit further includes second exchange completion data production requesting means for requesting the exchange completion data keeping device to produce the first exchange completion data; and

the exchange completion data keeping device further includes:

exchange completion data production means for producing the first and second exchange completion data in response to the requests from the first and second exchange completion data production requesting means; and

5 exchange completion data keeping means for keeping the first and second exchange completion data produced by the exchange completion data production means so that each requesting unit can be identified.

10 5. The unit-to-unit data exchange system according to claim 4, wherein:

each of the first and second units further includes:

data conversion means for converting first data owned by the unit to second data that can be reproduced successfully
15 only by using the exchange completion data; and

data recovery means for recovering data that can be reproduced successfully from data received from the other unit by using the exchange completion data transmitted from the exchange completion data transmission means;

20 the exchange completion data keeping device further includes conversion process data production/transmission means for producing first and second conversion process data used for converting the first data to the second data that can be reproduced successfully by using the first and second exchange completion
25 data, and transmitting the first conversion process data to the

second unit and the second conversion process data to the first unit;

the data conversion means of the first unit converts the first data to the second data by using the second conversion process data from the conversion process data transmission means; and

the data conversion means of the second unit converts the first data to the second data by using the first conversion process data from the conversion process data transmission means.

10 6. The unit-to-unit data exchange system according to claim 5, wherein:

the first conversion process data is a first encryption key;

the first exchange completion data is a first decryption key corresponding to the first encryption key;

15 the second exchange process data is a second encryption key; and

the second exchange completion data is a second decryption key corresponding to the second encryption key.

20 7. The unit-to-unit data exchange system according to claim 1, wherein:

each of the first and second units further includes communication result notification means for notifying the exchange completion data keeping device of a communication result when a communication session with the other unit is terminated; and

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the exchange completion data transmission means determines whether or not both of the first and second units have successfully received data of interest based on the communication results from the communication result notification means of the first unit and
5 that of the second unit.

8. The unit-to-unit data exchange system according to claim 6, wherein:

the communication result is information indicating whether
10 or not the data of interest has been received successfully; and

the exchange completion data transmission means transmits exchange completion data if the exchange completion data transmission means receives information indicating that the data has been received successfully from both the first and second units.
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9. The unit-to-unit data exchange system according to claim 1, wherein:

the first exchange completion data is a decryption key used for decrypting data given by the second unit to the first unit;
20 and

the second exchange completion data is a decryption key used for decrypting data given by the first unit to the second unit.

10. The unit-to-unit data exchange system according to
25 claim 1, wherein each of the first and second units further includes

resend requesting means for requesting the other unit to resend data of interest if the unit fails to fully receive the data of interest.

5 11. A unit for exchanging data owned by the unit with data of interest owned by another unit, comprising:

 exchange completion data production means for producing first exchange completion data that is necessary for reproducing the data owned by the unit;

10 exchange completion data registration means for registering the first exchange completion data produced by the exchange completion data production means at an exchange completion data keeping device for keeping exchange completion data; and

 exchange completion data obtaining means for obtaining, from
15 the exchange completion data keeping device, second exchange completion data that is necessary for reproducing data obtained from the other unit when a communication session with the other unit is terminated.

20 12. The unit according to claim 11, further comprising:

 data conversion means for converting data owned by the unit to data that can be reproduced successfully only by using the first exchange completion data; and

 data recovery means for recovering data that can be
25 reproduced successfully from data received from the other unit

by using the second exchange completion data obtained by the exchange completion data obtaining means.

13. The unit-to-unit data exchange system according to claim 12, further comprising exchange history storing means for storing a history of data exchanges made with other units, wherein:

the data conversion means changes a data conversion method based on the exchange history; and

the exchange completion data production means changes a method of producing exchange completion data based on the exchange history.

14. The unit according to claim 11, further comprising resend requesting means for requesting the other unit to resend data of interest if the unit fails to fully receive the data of interest.

15. A unit for exchanging data owned by the unit with data of interest owned by another unit, comprising:

exchange completion data production requesting means for requesting an exchange completion data keeping device for keeping exchange completion data to produce first exchange completion data that is necessary for reproducing the data owned by the unit; and

exchange completion data obtaining means for obtaining, from the exchange completion data keeping device, second exchange completion data that is necessary for reproducing data obtained

from the other unit when a communication session with the other unit is terminated.

16. The unit according to claim 15, further comprising:

5 conversion process data reception means for receiving conversion process data used for converting the data owned by the unit so that the data can be reproduced successfully by using the first exchange completion data sent from the exchange completion data keeping device;

10 data conversion means for converting the data owned by the unit by using the conversion process data received by the conversion process data reception means; and

15 data recovery means for recovering data that can be reproduced successfully from data obtained from the other unit by using the second exchange completion data obtained by the exchange completion data obtaining means.

17. The unit according to claim 16, further comprising:

20 exchange history storing means for storing a history of data exchanges made with other units; and

 conversion method notification means for notifying the exchange completion data keeping device of a conversion method used by the data conversion means based on the exchange history,

25 wherein the data conversion means converts the data owned by the unit by using conversion process data using the specified

conversion method sent from the exchange completion data keeping device.

18. The unit according to claim 15, further comprising
5 requesting means for requesting the other unit to resend data of interest if the unit fails to fully receive the data of interest.

19. An exchange completion data keeping device used in a system for exchanging data between units connected to each other
10 via a communications medium, comprising:

exchange completion data keeping means for keeping exchange completion data necessary for reproducing data exchanged between a first unit and a second unit; and

exchange completion data transmission means for
15 transmitting exchange completion data that is necessary for reproducing data obtained by the first unit to the first unit and transmitting exchange completion data that is necessary for reproducing data obtained by the second unit to the second unit only when both of the first and second units have successfully
20 received data of interest.

20. The exchange completion data keeping device according to claim 19, further comprising:

exchange completion data production means for producing the
25 exchange completion data in response to a request from the first

and second units; and

exchange completion data keeping means for keeping the exchange completion data produced by the exchange completion data production means so that each requesting unit can be identified.

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21. The exchange completion data keeping device according to claim 20, further comprising conversion process data production/transmission means for producing conversion process data such that exchanged data can be reproduced successfully at the first and second units by using the exchange completion data produced by the exchange completion data production means, and transmitting the conversion process data to the first and second units.

15 22. The exchange completion data keeping device according to claim 19, wherein the exchange completion data transmission means determines whether or not both of the first and second units have successfully received data of interest based on communication results from the first and second units.

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23. The exchange completion data keeping device according to claim 22, wherein:

the communication result is information indicating whether or not the data of interest has been received successfully; and

25 the exchange completion data transmission means transmits

exchange completion data when receiving information indicating that the data has been received successfully from the first and second units.

5 24. The exchange completion data keeping device according to claim 19, further comprising exchange completion data deletion means for deleting exchange completion data kept by the exchange completion data keeping device if a predetermined condition is met.

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 25. The exchange completion data keeping device according to claim 24, wherein the predetermined condition is such that the exchange completion data deletion means deletes exchange completion data transmitted to the first and second units from
15 the exchange completion data transmission means if the first and second units have successfully received the transmitted exchange completion data.

 26. The exchange completion data keeping device according
20 to claim 24, wherein the predetermined condition is such that the exchange completion data deletion means deletes the exchange completion data registered by the first and second units if the exchange completion data deletion means is notified from either unit that the data of interest has not been received successfully.

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27. A program for instructing a computer device to exchange data owned by the computer device with data of interest owned by another computer device, comprising the steps of:

instructing the computer device to produce first exchange completion data that is necessary for reproducing the data owned by the computer device;

instructing the computer device to register the produced first exchange completion data at an exchange completion data keeping device for keeping exchange completion data; and

instructing the computer device to obtain, from the exchange completion data keeping device, second exchange completion data that is necessary for reproducing data obtained from the other computer device when a communication session with the other computer device is terminated.

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28. A program for instructing a computer device to exchange data owned by the computer device with data of interest owned by another computer device, comprising the steps of:

instructing the computer device to request an exchange completion data keeping device for keeping exchange completion data to produce first exchange completion data that is necessary for reproducing the data owned by the computer device; and

instructing the computer device to obtain, from the exchange completion data keeping device, second exchange completion data that is necessary for reproducing data obtained from the other

computer device when a communication session with the other computer device is terminated.

29. A program for instructing a computer device, which is
5 used in a system for exchanging data between computer devices connected to each other via a communications medium, to function as:

exchange completion data keeping means for keeping exchange completion data necessary for reproducing data exchanged between
10 a first computer device and a second computer device; and

exchange completion data transmission means for transmitting exchange completion data that is necessary for reproducing data obtained by the first computer device to the first computer device and transmitting exchange completion data that
15 is necessary for reproducing data obtained by the second computer device to the second computer device only when both of the first and second computer devices have successfully received data of interest.